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ABSTRACT

The Appalachian Education Satellite Project is designed to apply communications satellite technology to the task of improving the quality of education in Appalachia. The report describes attitudinal responses of the participating teachers to the various learning activities, the delivery system, and the equipment that were used in the course, Career Education in the Elementary School. The course consisted of 12 videotaped lessons broadcast via satellite; 12 associated audio review segments; a live, interactive seminar; and relevant reading, learning activities, and testing. The report includes an outline of the broadcast lessons and a detailed discussion of the audience reactions to each component of the course. This is 7th in a 12 volume series. (EMH)

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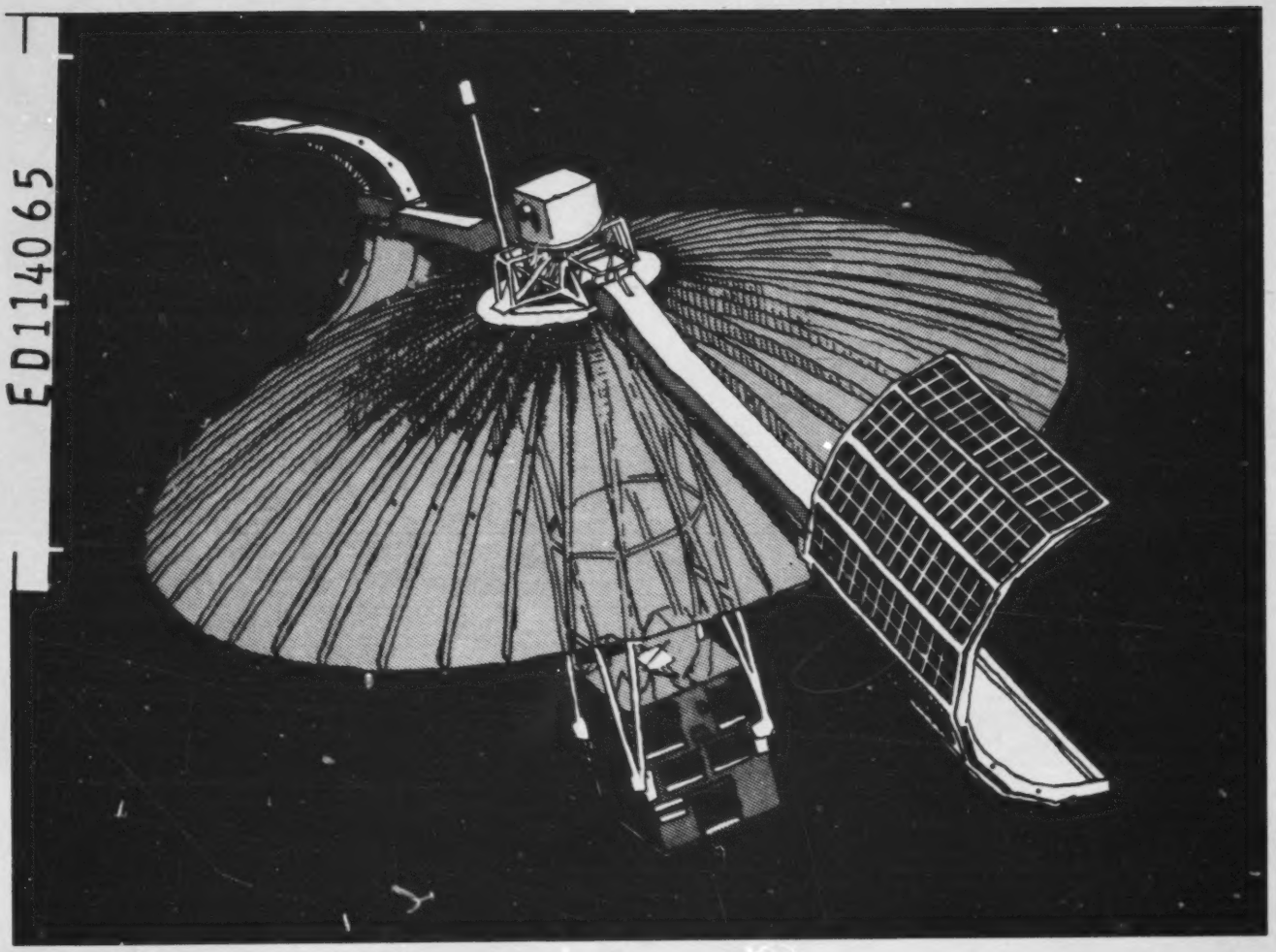

Student Ratings: CEE

appalachian education satellite project

Technical Report

number 7

SP002 689

USER RATINGS OF INSTRUCTIONAL ACTIVITIES: ELEMENTARY CAREER EDUCATION, SUMMER, 1974

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Prepared by

Larry Harding

William J. Bramble

Rodger Marion

July, 1975

The Technical Report Series of the Appalachian Education Satellite Project is edited and published by the RCC Evaluation Component at the University of Kentucky, Lexington, Kentucky.

The purpose of this series is to document and disseminate information about the design, implementation, and results of the AESP experiment.

William J. Bramble and Claudine Ausness

Editors

Technical Reports #1 to 12 in this series are entitled:

1. AESP Data Base Information: Rationale, Data Collection Procedure, Interpretation of Results.

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7. User Ratings of Instructional Activities: Career Education in the Elementary Grades, Summer, 1974.

8. User Achievement: Diagnostic and Prescriptive Reading Instruction Course, Summer, 1974.

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12. Summative Evaluation of Diagnostic and Prescriptive Reading Instruction K-6 Course, Spring, 1975.

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The team responsible for the development and production of the instructional materials included:

Dr. David L. Larimore, Director of the Resource Coordinating Center

Dr. Nofflet Williams, Deputy Director of the Resource Coordinating Center

Dr. Raymond Manion, Director, Career Education*

Betty Bowling, Director, Career Education

Timothy A. Pasden, Director, Information Systems

Dr. Frank Colton, Director, Four-Channel Audio

Roger Koonce, Production Manager, Television

Bernie Lovely, Technical Writer

Alice Martinson, Materials Developer

Barbara Preli, Consultant

Cathy Whitton, Materials Developer

Televised portions of the course produced at the University of Kentucky Television Studio. The Producer/Director for the televised portions of the course was:

Peter Gillette

Layout and typing of the report by Marianne Truong.

*September 1, 1973 to March 31, 1974.

TABLE OF CONTENTS

	Page
LIST OF TABLES AND FIGURES	iv
LIST OF APPENDICES	v
INTRODUCTION	1
METHOD	7
Subjects	7
Description of Course Participants	7
Description of Site Coordinators	9
Description of Consulting Faculty Members	9
Procedures and Instrumentation	12
RESULTS	20
Videotaped Programs	20
Four-Channel Audio Review	26
Laboratory and Other Activities	34
Televised Live, Interactive Seminars	45
Reactions to Evaluation Materials	49
Reactions to Unit Tests	51
CONCLUSIONS	54
APPENDICES	56

LIST OF TABLES AND FIGURES

TABLE		Page
1	SITE LOCATION AND ENROLLMENT IN CEE COURSE	8
2	DESCRIPTIVE CHARACTERISTICS OF SITE COORDINATORS	10
3	PREPLANNED SCHEDULE OF LEARNING ACTIVITIES IN CEE COURSE	13
4	INSTRUMENTS AND ACTIVITIES	14
5	FACTORS FOR ATTITUDE INSTRUMENTS	17
6	FACTOR MEANS FOR TELEVISED LECTURE QUESTIONNAIRE: CEE COURSE	21
7	RANKING OF PROGRAMS BY FACTOR MEANS ON TELEVISED LECTURE QUESTIONNAIRE: CEE COURSE	22
8	FACTOR MEANS ON USER FOUR CHANNEL AUDIO QUESTIONNAIRE: CEE COURSE	27
9	AUDIO REVIEW QUESTIONS: CEE COURSE	32
10	FACTOR MEANS ON LABORATORY ACTIVITIES QUESTIONNAIRE: CEE COURSE	35
11	RANKING OF FACTOR MEANS FOR LABORATORY ACTIVITIES QUESTIONNAIRE: CEE COURSE	36
12	FACTOR MEANS FOR INFORMATION SYSTEMS USER SATISFACTION QUESTIONNAIRE: CEE COURSE	41
13	FACTOR MEANS ON SEMINAR QUESTIONNAIRE: CEE COURSE	45

FIGURE		
1	MAP OF THE APPALACHIAN REGION	3

LIST OF APPENDICES

Appendix A — Page

Item A — TELEVISED PROGRAM TITLES AND DESCRIPTIONS OF MATERIAL COVERED 56

Item B — SUMMARY OF MATERIALS COVERED IN LABORATORY ACTIVITIES . . 60

Appendix B

Table A — MEAN RATINGS ON TLQ: CEE COURSE 66

Table B — ITEM MEANS AND STANDARD DEVIATIONS FOR IFQ: CEE COURSE . . 68

Table C — MEAN RATINGS ON UFCA: CEE COURSE 69

Table D — MEAN RATINGS ON LAQ: CEE COURSE 70

Table E — MEAN RATINGS ON ISUSQ: CEE COURSE 72

Table F — MEAN RATINGS ON SQ: CEE COURSE 74

INTRODUCTION

This report describes the attitudinal responses to the various learning activities, the delivery system, and the equipment that were obtained from students who took a course in career education during the summer of 1974. The course was entitled Career Education in the Elementary School (CEE) and was produced by the Appalachian Education Satellite Project (AESP) for television broadcast via satellite to sites across the Appalachian region.

The Appalachian Education Satellite Project began in June 1973 with a grant from the National Institute of Education (NIE) to the Appalachian Regional Commission (ARC). The purpose of the project was to demonstrate the feasibility of conducting graduate level courses for teachers using sophisticated National Aeronautics and Space Administration (NASA) communications satellites. The four courses developed for the project were in the areas of career education and reading instruction. All software for the courses was developed at the Resource Coordinating Center (RCC) located on the campus of the University of Kentucky in Lexington, Kentucky.

A total of four courses, two in reading and two in career education were scheduled to be conducted via satellite between June 1974 and June 1975. The course participants were approximately 1200 teachers (300 per course) gathered at classroom sites at 15 different locations in the Appalachian region. The sites were located in eight different states from Alabama to

New York and were grouped into sets of three, a main site and two ancillary sites. Main sites were able to receive audio and video signals transmitted from the RCC via the ATS-6 satellite and could receive and send voice or teletype signals to or from the RCC and other main sites via the ATS-3 satellite. Ancillary sites could receive audio and video signals transmitted from the RCC via ATS-6 and were in telephone communication with the associated main site. Ancillary sites could not receive or transmit via ATS-3. All sites were equipped with a color television monitor and had adequate seating for 20 students. The locations of the 15 sites are illustrated in Figure 1.

The monitoring of classroom sites and many other project related tasks conducted at the local level were the responsibility of project staff members called site coordinators, employed at participating Regional Education Service Agencies (RESAs) affiliated with the ARC. A full description of the duties of the site coordinator can be found in AESP Technical Report #2 (Ausness and Bowling, 1974).

The Career Education in the Elementary School (CEE) course was conducted using the two NASA satellites during the summer of 1974. The course was designed so that high quality instruction and the opportunity for student interaction with content experts was possible. It was not necessary for an expert in career education instruction to be on-site during class meetings. The course consisted of twelve thirty-minute, color videotaped lessons; twelve associated audio review segments (one for each videotaped lesson), laboratory activities, unit tests, and related reading materials; and four forty-five minute, live, interactive (color) seminar programs.

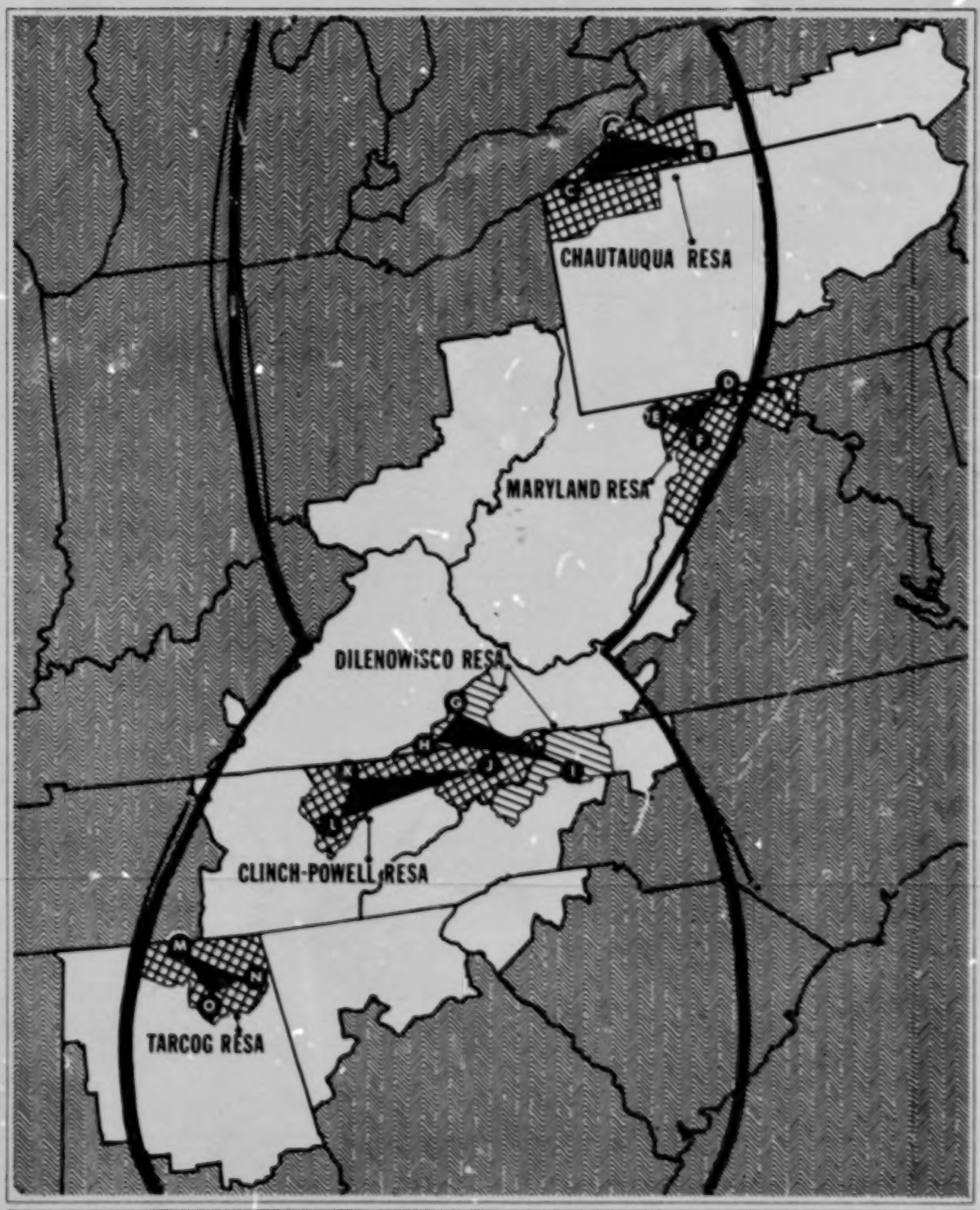

FIG. 1 MAP OF THE APPALACHIAN REGION SHOWING THE FIVE RESA CLUSTERS, RECEIVING TRIANGLES, AND APPROXIMATE SATELLITE FOOT PRINT.

A.	Fredonia, N.Y.	I.	Boone, N.C.
B.	Olean, N.Y.	J.	Johnson City, Tenn.
C.	Edinboro, Pa.	K.	LaFollette, Tenn.
D.	Cumberland, Md.	L.	Coalfield, Tenn.
E.	McHenry, Md.	M.	Huntsville, Ala.
F.	Keyser, W. Va.	N.	Rainsville, Ala.
G.	Norton, Va.	O.	Guntersville, Ala.
H.	Sticklyville, Va.		

The course was designed to be a survey of major principles, concepts, and practices of career education in the elementary school. Experiences were offered the participants which enabled them to develop career education units which could be infused into their academic subject areas at the appropriate grade levels. As a result of this course, each participant was also to be able to inform the school staff of the need for career education and to serve as a leader in planning and implementing a career education program in classroom, school, or school system.

The CEE course was developed by a team of AESP personnel. The production team included Producer-Director Peter Gillette and content persons Dr. David Larimore, Dr. Nofflet Williams, Dr. Raymond Manion, Betty Bowling, Timothy Pasden, Dr. Frank Colton, Mary Clarkson, Roger Koonce, Bernie Lovely, Alice Martinson, Barbara Preli and Cathy Whitton. Every effort was made within the timeframe of the production schedule to involve teachers, administrators, and other school personnel as well as cooperating faculty at various universities and colleges in the Appalachian region in the planning and development of the course. The goal was to make the course particularly responsive to the needs and interests of teachers in the region. Graduate credit was available to the course participants at the University of Kentucky and at a number of cooperating universities in the region.

The thirty-minute, videotaped lessons can be described as studio based lecture presentations by the course instructor, supported by graphics and filmed materials--including classroom scenes and interviews with various professionals in the field of career education. A course outline is included in Appendix A, Item A.

Audio review segments consisted of four or five four-alternative multiple choice questions. As each question was presented the student selected one of the four audio tracks corresponding to what he believed the correct answer to be. An explanation of the correctness or incorrectness of the answer was contained on the track selected by the student. The questions were selected to reinforce and expand upon the material presented in the videotaped lecture. Because there were four tracks and the series of questions was presented in rigid serial order the activity was similar to programmed instruction in that branching within questions was possible. However, branching between questions was not possible. Special equipment for the four channel audio instruction, including the student response selectors and electronic equipment for automatically recording answers, is described in AESP Technical Report #5 (Bramble, Ausness, and Freeman, 1975).

The live, interactive seminars were structured in the following way. Dr. David Larimore of the University of Kentucky served as a moderator for a panel of professionals who were experts in the area of focus for that particular seminar. Questions about the subject matter of the course were transmitted from the main classroom sites to the Lexington, Kentucky studio via teletype transmission using ATS-3. Thus the questions were immediately available at the studio in written form. Questions from ancillary sites were teletyped via conventional telephone lines to the associated main site and then transmitted to Lexington. Questions were screened in the studio to minimize redundancy and passed to the seminar moderator to be posed to the guests. Questions were identified by classroom site as they were read over the air.

The laboratory activities were conducted during each class session upon completion of the television and audio review activities. Their purpose was to expand upon points made in the proceeding activities. Readings, game activities, and discussion groups were prominent techniques used in these sessions. Laboratory sessions also included instruction in the use of the various information systems made available to course participants. Appendix A, Item B contains a summary of the laboratory activities conducted for each class session.

The project objective of delivering the course via satellite was achieved with minor exceptions. There were a few equipment malfunctions at individual classroom sites which precluded the viewing of several programs. Videotapes and other materials were made available to students at these sites to make up the class activities missed. The major equipment problem was associated with the four-channel audio review equipment: the equipment was delivered late and designed poorly. In fact the equipment was available to students for less than half of the programs, but printed scripts were substituted for the earlier programs. The transmission, reception, and general equipment successes and failures are detailed in AESP Technical Report #5 (Bramble, Ausness, and Freeman, 1975).

This report discusses the attitudinal reactions of the course participants to the set of instructional activities that make up the CEE course. The perceptions of the site coordinators and consulting faculty in regard to the effectiveness of the instructional techniques are also discussed. As a result of these discussions, recommendations for improvement of instructional techniques can be made.

METHOD

Subjects

Data on the Career Education in the Elementary School (CEE) course were collected from three different groups: 1) course participants, 2) site coordinators, and 3) consulting faculty members. A brief description of the characteristics of each of these groups is presented below.

Description of Course Participants

A total of 250 students initially enrolled in the CEE course, 236 of whom completed the course. The number of participants at each site who enrolled and who completed this course is presented in Table 1.

The Confidential Background Questionnaire (CBQ) was completed by each course participant. A copy of this instrument and its description may be found in AESP Technical Report #4 (Bramble, et al, 1974, pp. 87-88). Participant characteristics, as reflected on the CBQ are discussed at length in AESP Technical Report #9 (Marion, Bramble, and Ausness, 1975). Summarizing these data, it may be said that three fourths of the course participants were females; 185 of the students were teachers, about half of whom taught in an elementary school; and 37 students had previous experience teaching career education, averaging 2.9 years instructing in this field. All but two students held a baccalaureate degree, with 229 course participants holding a master's degree or above. Less than 12% of the course participants had previously taken either a graduate or undergraduate course in career education.

TABLE 1

SITE LOCATION AND ENROLLMENT IN CEE COURSE

Lead RESA	Site Locations	Number of Participants Initially Enrolled in Course	Number of Participants Completing the Course
Chautauqua Board of Cooperative Educational Services (BOCES) Box 250 Fredonia, NY 14063	Fredonia, NY	20	20
	Olean, NY	16	16
	Edinboro, NY	17	17
Clinch-Powell Educational Cooperative Harrogate, TN 37752	LaFollette, TN	19	19
	Coalfield, TN	19	17
	Johnson City, TN	8	6
DILENOWISCO Educational Cooperative 1032 Virginia Avenue Norton, VA 24273	Norton, VA	18	17
	Sticklyville, VA	20	19
	Boone, NC	16	16
Maryland RESA 110 Washington St. Cumberland, MD 21502	Cumberland, MD	21	20
	Keyser, W.VA	19	19
	McHenry, MD	20	19
TARESA (formerly TARCOG) 2603-C Leeman Ferry Road Huntsville, AL 35801	Huntsville, AL	12	11
	Guntersville, AL	14	12
	Rainsville, AL	11	8
	Total	250	236

Description of Site Coordinators

The site coordinator's duties consisted of 1) organizing the classroom activities of the students, 2) monitoring laboratory sessions, and 3) coordinating the daily evaluation activities. The site coordinators also acted as a liaison between the students and the RCC. A full description of the duties of the site coordinator can be found in AESP Technical Report #2 (Ausness and Bowling, 1974). Descriptive characteristics of the site coordinators are summarized in Table 2.

Description of Consulting Faculty Members

The duties of the consulting faculty members consisted of 1) acting as a liaison between the RCC and cooperating universities, 2) consulting on program content, 3) acting as a consultant for students, and 4) observing and evaluating the instructional programs. Each triangle had the services of one consulting faculty member, making a total of five for the CEE course.

Information concerning the consulting faculty was obtained from the Consulting Faculty Background Questionnaire (CFQ), referred to in AESP Technical Report #4 (Bramble, et al, 1974, pp. 94-95). Information from the CFQ indicates that three of the consulting faculty members held an Ed.D., one a Ph.D., and the other an M.S. All five consulting faculty members have taught career education concepts in their classes. Three of the consulting facultymembers have helped schools to install career education programs. Their names, the universities they represented, and the sites they observed are listed below:

Dr. Ronald Clifton - Frostburg State College
Cumberland, Keyser, McHenry

TABLE 2

DESCRIPTIVE CHARACTERISTICS OF SITE COORDINATORS
(N = 14)

	Frequency	Percentage
1. Sex		
Male	8	57%
Female	6	43%
2. Highest Degree Completed		
Baccalaureate	3	21%
Masters	11	79%
3. Work Experience as:		
Elementary Teacher	7	50%
Junior High Teacher	8	57%
Undergraduate College Teacher	7	50%
Graduate College Teacher	4	29%
Elementary School Principal	1	7%
Junior High Principal	1	7%
Senior High Principal	1	7%
Counselor	3	21%
4. Courses Taken in Career Education Area		
0	10	71%
1	1	7%
2	1	7%
3	0	0%
4	1	7%
5 or more	1	7%
5. Taught a Career Education Course?		
Yes	1	7%
No	13	93%

TABLE 2 -- CONTINUED

	Frequency	Percentage
6. Integrated Career Education Concepts into a Class you taught?		
Yes	8	57%
No	4	29%
Have not taught	2	14%
7. Attended Workshop or Special Training Sessions in Career Education?		
Yes	5	36%
No	9	64%
8. Helped plan or establish a Career Education Program?		
Yes	6	43%
No	8	57%

Dr. Peter T. Glofka	-	St. Bonaventure University Fredonia, Olean, Edinboro
Dr. Richard K. Harwood	-	University of Virginia Norton, Sticklyville, Boone
Dr. Gerald K. LaBorde	-	University of Tennessee Lafollette, Coalfield, Johnson City
Ms. Bernice Richardson	-	Alabama A & M University Huntsville, Guntersville, Rainsville

A full description of the duties of the Consulting Faculty can be found in AESP Technical Report #2 (Ausness and Bowling, 1974).

Procedures and Instrumentation

Each class day began at 8:30 am EDT and ended at 3:30 pm EDT, with an hour provided for lunch. It is important to note that the participants attended class eight times and that they viewed and performed associated audio review and laboratory activities for two programs on most class days. On a typical class day the first activity was watching a video program and completing the associated audio review. Immediately after this a second video program and its associated audio review were broadcast. Later, the laboratory activities associated with each program were completed. Table 3 shows when these activities were undertaken. Seminars were shown before the videotaped program on days when only one videotaped program was scheduled and prior to the laboratory activities when two videotaped programs were scheduled.

Evaluation instruments measuring attitudes toward the CEE course focused on the four major instructional activities used in the course:

TABLE 3

PREPLANNED SCHEDULE OF LEARNING ACTIVITIES IN CEE COURSE

Session	Date	Video Program	Audio Review	Seminar	Laboratory Activity
1	July 2	1, 2	1, 2		1
2	July 9	3, 4	3, 4		2
3	July 16	5	5	1	3
4	July 23	6, 7	6, 7		4
5	July 30	8, 9	8, 9		5
6	Aug 6	10	10	2	6
7	Aug 13	11	11	3	7
8	Aug 20	12	12	4	8

the video lecture, four-channel audio review, the live, interactive seminars, and laboratory activities, including information systems. Table 4 lists the instruments used in this report and gives a synopsis of the information contained in them. For more complete information concerning the evaluation instruments, the reader is referred to AESP Technical Report #4 (Bramble, et al, 1974).

The main instrument used to measure attitudes concerning the videotaped programs was the Televised Lecture Questionnaire (TLQ). This instrument was administered to the students at the end of each videotaped program. The TLQ consisted of 27 five-point, Likert scale items concerning the quality of the programs.

TABLE 4

INSTRUMENTS AND ACTIVITIES

Instrument	Activity Evaluated					Instrument	Group Completing Instrument	When Completed
	Video	4-Channel	Laboratory (in class)	Pre-Program & Homework (out of class)	Seminar			
TLQ	X					Likert	Participants	After each Video Lesson
UFCA		X				Likert	Participants	After each Audio Review Lesson
LAQ			X			Likert	Participants	After each Laboratory Session
SQ					X	Likert	Participants	After each Seminar
IFQ	X	X	X	X	X	Likert & Comments	Participants	3 Times during Course
SR	X	X	X		X	Likert & Comments	Site Coordinators Consulting Faculty	End of Course
ISUSQ			X			Likert	Participants	End of Course

TLQ = Televised Lecture Questionnaire
UFCA = User Four-Channel Audio Questionnaire
LAQ = Laboratory Activities Questionnaire
SQ = Seminar Questionnaire
IFQ = Instruction Feedback Questionnaire
SR = Summative Report Form
ISUSQ = Information System User Satisfaction Questionnaire

The main instrument used to measure attitudes toward the four-channel audio review was the User Four-Channel Audio Questionnaire (UFCA). This instrument was administered to the students at the end of every four-channel audio review session. The UFCA consisted of 17 five-point, Likert scale items rating the sound, timing, mechanics, and content of the four-channel audio review.

The major instrument used to measure attitudes concerning the live, interactive seminars was the Seminar Questionnaire (SQ). This instrument was administered to the students at the end of each seminar. The SQ consisted of 21 five-point, Likert scale items concerning the quality of the live seminar presentation.

The Laboratory Activities Questionnaire (LAQ) was administered to the students at the completion of each session's lab activity. The LAQ consisted of 22 five-point, Likert scale items.

Student attitudes concerning the Information Systems were gathered on the Information System User Satisfaction Questionnaire (ISUSQ). The ISUSQ consisted of 25 five-point, Likert scale items, half of which were concerned with the Computer-Based Resource Guides and the other half with ERIC and AIM/ARM data base searches.

For all of the instruments used, except the Instruction Feedback Questionnaire (IFQ), the instructions for the use of the five-point, Likert scale were:

Rate the Statement as 5 if you strongly agree
4 if you moderately agree
3 if you feel neutral
2 if you moderately disagree
1 if you strongly disagree

Each of the five instruments (TLQ, UFCA, SQ, LAQ, and ISUSQ) was factor analyzed, and several different factor solutions were obtained for each instrument. For the factor analysis R^2s were inserted on the diagonals of the correlation matrices. Factors with eigenvalues greater than 1.00 were retained and subjected to VARIMAX rotation. From the final rotated factor loadings, items were selected to measure the scales defined by each of the factors. Items generally were retained for measurement of the factor on which they loaded most heavily (± .30 was the cut off point for inclusion on a factor). Where ambiguities occurred based on varying factor solutions, items were assigned to factors based on the semantic content of the item. For each instrument the names of the factors and the items included in the factor are presented in Table 5. For each program, factor means were computed by averaging across the item means that composed the factor. For each instrument the results are discussed in terms of factor means, and item means for each instrument are presented in Appendix B for those who want a more detailed picture of participant reactions.

Information concerning each course activity was gathered from the participants on the Instruction Feedback Questionnaire (IFQ). This instrument was administered after the completion of each third of the course (on July 16, August 6, and August 20, 1974) in order to measure participant attitudes toward the major learning activities. The IFQ consisted of 9 five-point, Likert scale items with space provided after each question for written comments. For the ratings, the participants were asked to make their standard of reference an average, graduate education course and to follow the following guidelines:

TABLE 5

FACTORS FOR ATTITUDE INSTRUMENTS

Instrument	Factor	Items on Factor
Televised Lecture Questionnaire (TLQ)	1) Television viewing conditions	1-4
	2) Overall quality of videotape presentation	7, 8, 10-13, 15-20, 22-23, 26-27
User Four-Channel Audio Questionnaire (UFCA)	1) Characteristics of sound	1-3
	2) Time allowed for different aspects of audio review	4-6
	3) Mechanics of presentation	7, 8, 10, 11
	4) Enjoyed using audio review equipment	9
	5) Audio review content	12-17
Laboratory Activities Questionnaire (LAQ)	1) Adequacy of time and facilities available, and appropriateness of the amount of material covered during the laboratory	10, 11, 14, 18, 19
	2) Usefulness of the laboratory as a hands-on illustration of the lecture concepts	1, 8, 9, 21
	3) Usefulness and attractiveness of the laboratory content to the participants	3-5, 13, 17, 20, 22
	4) Helpfulness of the site coordinator	6, 7
	5) Clarity of purpose and directions for doing laboratory	2, 12, 15, 16

TABLE 5 -- CONTINUED

Instrument	Factor	Items on Factor
Information Systems User Satisfaction Questionnaire (ISUSQ)	1) Value of Information obtained from information systems	7-10, 13-18
	2) Information systems were useful as information sources	20-25
	3) Adequacy of explanation and ease of use of information systems	1-4, 11, 12
	4) Length of time to get information back	5, 6
Seminar Questionnaire (SQ)	1) Quality of presentation style of seminars	2, 7-12, 19, 20
	2) Value of information communicated during seminar	13-16, 8
	3) Adequacy of opportunity to ask questions	3, 5, 6, 15
	4) Important questions were asked by participants	4
	5) Proper time in course sequence seminar	17

Rate the statement as

5 outstanding, if you received a lot more from the activity than from a comparable activity in a graduate education course;

4 good, if you received a little more from the activity than you usually obtain from similar activities in a graduate education course;

3 average, if you received about the same amount from the activity;

2 poor, if you received somewhat less;

1 unacceptable, if you received a lot less information from the activity than you usually obtain from similar activities in a teacher preparation course.

An overall evaluation of each activity was obtained at the conclusion of the course from the site coordinators and consulting faculty on the Summative Report Form (SR). This instrument provided them the opportunity, primarily through the writing of comments, to give a summary of what they considered to be the distinctive features of the CEE course. It also allowed them the opportunity to make recommendations for course revision.

For each of the four main instructional activities a selection of the written comments is included. In each case the comments were selected according to the following criteria: 1) include negative and positive comments in proportion to the total distribution of comments received, and 2) insure that all major complaints are included.

RESULTS

This section contains a summarization of the data obtained from the rating instruments. Data are presented for each of the major activities rated: pretaped video lecture, four-channel audio review, laboratory activities, and live seminars. Participant and site coordinator reactions to the evaluation procedures and rating scales are also discussed. In the Method section it was explained that for the TLQ, UFCA, SQ, LAQ, and ISUSQ a rating of 3 was to be given when the participant felt neutral towards a statement. From a careful comparison of written comments to ratings on the instruments it was felt that with a rating of 3 the participants actually expressed an attitude of being impressed neither positively nor negatively with the activity being rated. Thus, mean ratings of 2.5 to 3.5 are interpreted as "non impressed." The mean item range of 3.5 to 4.5 is considered to be a moderately to strongly positive attitude and 1.5 to 2.5 is considered as strongly to moderately negative attitude towards the aspects of the learning activity being considered.

Videotaped Programs

From the factor analysis of the Televised Lecture Questionnaire (TLQ), two factors were obtained: 1) television viewing conditions (high ratings indicate favorable conditions) and 2) overall quality of videotape presentation (high ratings indicate high quality). The numbers of the items that make up each factor, as well as the factor means for each program are presented in Table 6. If the reader wishes to refer to the participants'

TABLE 6

FACTOR MEANS FOR TELEVISED LECTURE QUESTIONNAIRE: CEE COURSE

Factor	Items on Factor	Pretaped Video Program											
		1	2	3	4	5	6	7	8	9	10	11	12
1) Television viewing conditions	1-4	4.23	4.32	4.03	4.10	3.96	4.25	4.25	3.96	4.01	4.35	4.37	4.17
2) Overall quality of videotape presentation	7, 8 10-13 15-20 22-23 26-27	4.19	4.25	4.01	4.16	4.09	4.14	4.09	3.79	3.82	3.90	4.04	4.03

ratings for individual items, item means and overall means are presented in Appendix B, Table A.

On the first factor it maybe concluded that overall the television viewing conditions were favorable since all program means from Table 6 were above or near to a four rating. Programs five and eight have the only means that are below four.

Because the second factor was the student reaction to the overall quality of the programs, it was decided to rank-order the programs accordir to their factor means. The rankings are presented in Table 7.

TABLE 7

RANKING OF PROGRAMS BY FACTOR MEANS ON TELEVISED LECTURE QUESTIONNAIRE: CEE COURSE

Rank	Mean	Program Title	Program Number
1	4.25*	Complete C.E. program	2
2	4.19*	Concept of C.E.	1
3	4.16*	Curriculum integration	4
4	4.16*	Collecting and using instructional materials	6
5.5	4.09	Total curriculum integration	5
5.5	4.09	Community resources	7
7	4.04	Special interests and C.E.	11
8	4.03	Rewards of a C.E. program	12
9	4.01	Job clustering	3
10	3.90*	Dealing with educational change	10
11	3.82*	Attitudes about change	9
12	3.79*	Implementation strategies	8

*Significantly different from grand mean (GM = 4.05) at .05 level

In general, it may be seen that the programs from the first half of the course are rated high and those from the second lower. Although this could reflect content or production differences among programs, a more likely explanation expressed by Peter Gillette is that the production schedule was very tight and less time was available for the production of the programs for the latter half of the course. Some of the later programs (nine through twelve) had to be pieced together with film clips used in earlier programs and involved extensive use of the narrator, Bob Cooke. In fact, two external reviewers of the videotaped programs recommended that programs 8, 10, 11 and 12 be revised due to their redundant nature.

Item two on the Instruction Feedback Questionnaire (IFQ) also concerned the videotaped programs and asked the participants to compare the video programs with on campus class lectures with which they were familiar (the means for all IFQ items are presented in Appendix B, Table B). The IFQ was administered three times and the means for item two were: 3.65, 3.28, and 3.50. These ratings are for programs one through five, six through ten, and eleven and twelve respectively. Each of these means is significantly greater than a rating of 3.0 (3.0 indicates equivalent to a typical campus lecture). The overall mean rating for the videotaped programs was 3.49. This value is significantly greater than 3.0, but in practical terms not much greater. One can conclude from the ratings that the students thought that these videotaped programs were only slightly better than typical campus lectures.

Many comments written by the participants on the IFQ with regard to the televised programs expressed satisfaction with the organization and design of the programs. The participants liked the classroom sequences and the interviews with Career Education "experts."

"I especially enjoy the filmed classroom examples. Very interesting. Visual aspect of lecture is great!"

"Having "experts" giving opinions is good."

"Lecturer is exceptionally articulate and materials are well organized."

"Very well organized and helpful."

"I thought the programs were well planned, clearly organized providing much useful information."

"Actual instances and viewing materials and concepts in use is more valuable than lecture."

"Having filmed talks by authorities gave more meaning."

"The visuals used during the telecasts and the comments by several other "experts" added a great deal."

"Very good consultants who faced issues and were helpful in justifying career education."

The participants commented that they felt that the programs were sometimes too redundant and designed to convince people of the value of Career Education rather than illustrate teaching techniques and implementation strategies. They also said that the programs were impersonal in that there was little opportunity to ask questions and clarify misunderstandings.

"Thus far, programs seem to be well-structured, but moderators comments/classroom activities observed appear to be too repetitious and at times over-simplified."

"Actually, the programs are geared toward attitude improvement--I have the attitude, I want the methods!"

"Too impersonal. A site coordinator is not the same as a professor."

"TV does not allow for questions and answers, and seminars do not provide enough opportunity."

"The instructor did not seem to enjoy what he was doing."

"No way to clear up a student question or express disagreement."

"One problem has been that many speakers give their own feelings and define terms differently. This leaves the student in a quandry."

Comments by the site coordinators, from the Summative Report Form (SR), are overall very favorable and express many of the same concerns as the participants' comments did. The site coordinators felt that the program content was excellent, but that there was too much redundancy. Also, they suggested greater use of specific classroom examples and less emphasis on "selling" the conept of Career Education.

"On the whole, the course was excellent in content--but some of the parts might have been put in different order to the greater benefit of the students."

"Students felt the tapes were too redundant and there were too many interview segments. The material could have been condensed."

"The course was presented with a quality effort that made it generally appealing and easy to follow. However, there was a touch of redundance in using some materials repeatedly. The students reacted well to the course in general but did respond negatively to redundant efforts."

"Student reactions indicated a feeling that the last 5 tapes should have included more examples of classroom handling of ideas expressed by the various leaders."

"More actual classroom experiences needed to have been shown. Not specific enough."

"The lectures seemed to be very repetitious in content. It would have been most helpful to have had unfamiliar, extensively-used terms defined at the beginning of the course or in the first lecture rather than after student inquiry in 3rd and 4th weeks. Presentation of lectures was excellent other than degree of repetition of some video shots."

"Too much of a sales approach. Concentrate more on what an individual can do in a self-contained classroom."

The consulting faculty members were very positive in their overall ratings of the televised programs. They were asked to rate the programs on a 5-point Likert scale (5 - excellent, 4 - excellent at times,

3 - acceptable, 2 - weak, and 1 - unacceptable). Their average rating was 4.05. Their comments generally emphasized the redundancy mentioned earlier by the participants and site coordinators.

> "Too much repetition (scenes, people)."
>
> "Amount of content during several telecasts was too much. Too much material to be comprehended at one time."
>
> "Last program somewhat repetitious of earlier material, although this may be a function of being a summary program."
>
> "Lectures offered relevant information, however, format was sometimes stiff. Perhaps more questions with answers may prove helpful."

Four-Channel Audio Review

The factor analysis of the User Four-Channel Audio Questionnaire (UFCA) identified five factors. These factors were: 1) characteristics of sound (high rating indicates adequate sound), 2) time allowed for different aspects of audio review, e.g. putting on earphones, answering questions (high rating indicates sufficient time), 3) mechanics of presentation, e.g., speaker spoke clearly (high rating indicates mechanics adequate), 4) enjoyed using audio review equipment (high rating is adequate), and 5) quality of audio review content (high rating is adequate). The factor means are presented in Table 8 and for a more complete picture the reader may refer to the item means presented in Appendix B, Table C.

Prior to program 8 the audio review equipment was either not installed or not operating well enough for data to be collected. At some sites the participants heard more than one channel at the same time, and, at times, the participants did not hear the channel they selected [see AESP Technical Report #5 (Bramble, Ausness, and Freeman, 1975) for a detailed

TABLE 8

FACTOR MEANS ON USER FOUR CHANNEL AUDIO QUESTIONNAIRE: CEE COURSE

Factor	Items on Factor	Audio Review											
		1	2	3	4	5	6	7	8	9	10	11	12
1) Characteristics of sound	1-3	Four-channel audio review equipment either not installed or operating at an intermittent level							3.73	3.81	4.20	4.37	4.40
2) Time allowed for different aspects of audio review	4-6								4.57	4.51	4.57	4.67	4.67
3) Mechanics of presentation	7, 8 10, 11								4.29	4.29	4.32	4.46	4.56
4) Enjoyed using audio review equipment	9								3.63	3.34	3.88	3.79	3.95
5) Audio review content*	12-17	3.97	4.11	4.24	4.11	3.80	3.78	3.69	3.71	3.50	3.63	3.87	4.02

*Students read scripts of four-channel audio review if the equipment was not operational. Thus they could always rate items on UFCA pertaining to content.

discussion of the technical problems]. Only for the fifth factor (content) could data be collected for all programs. This was possible because the participants were supplied with written scripts for use when the audio review system was not operational.

When the audio equipment was operational, generally from programs eight on, the participant ratings were positive for factors one through four. Also, positive ratings were obtained for factor five (content), for all twelve programs.

As a general conclusion the content of the audio review segments was rated overall as being adequate. Also, when the equipment was functioning the participants enjoyed using it and found the quality of sound and other aspects to be acceptable.

Item three on the IFQ asked the participants to rate the audio review through comparison with "class quizzes followed by class discussions of the answers" (Appendix B, Table B). The mean ratings for this item were 3.52, 3.24, 3.46 for the three IFQ administrations respectively. The first mean (3.52) is based on the participants reactions to reading the scripts, the last two means (3.24 and 3.46) are mainly based on the participants reactions to actually using the four-channel equipment. However, several sites were still unable to use the audio review equipment for some of the later programs (even programs 8-12), and their content ratings would be based on the written scripts in those instances. It may be concluded from these ratings (3.24 and 3.46) that the participants slightly favored the audio review activity when it was compared to the similar on campus activities of class quizzes and subsequent discussions.

Participant comments on the IFQ indicated that the immediate feedback obtained with the audio review was its most positive feature. The participants also felt it was an unusual technique and a useful one.

> "Provides more immediate response - reinforcement or correction of error."
>
> "Instant, personal feedback is a good learning situation."
>
> "This method is great - helps you learn why your answer is shaky."
>
> "I am seldom correct, but I like the immediate evaluation and explanation of the best answer."
>
> "Very complete and practical answers in confirming concepts being taught."
>
> "Interesting as a change from the usual."
>
> "This is one of the most useful activities of the course. It was personal, comprehensive and meaningful."

The participants felt, in some cases, that the questions were subjective and not closely related to the television program. Some participants noted that they had difficulty following the oral presentation.

> "Good concept but several questions are quite subjective."
>
> "It is helpful to have feedback on correct answers as well as incorrect. The questions are often too closely related. Often incorrect responses appear correct."
>
> "Did not feel that in some cases these pertained to TV program specifically."
>
> "Audio does not quiz on what is shown on video."
>
> "We have poorly developed listening skills. I find it difficult to follow the problem."
>
> "It is easier to just read and answer questions."

The comments made by the site coordinators indicated that the participant reaction to the audio review was generally favorable. However, the difficulties with the equipment, the ambiguity in some of the questions and the slowness of the timing tended to reduce participant enthusiasm for the audio review.

> "Students responded very favorably to the four-channel audio portion of the course. The technological involvement stimulated student interest."
>
> "Activity was excellent at times."
>
> "Served as good reinforcement tool."
>
> "What you did was excellent but shorter questions and answers would be more effective. Eliminate one minute pause. 15 seconds for long questions and 10 seconds for shorter questions would be fine."
>
> "Very poor reaction - most simply ignored the process; turned off by technical problems for 1st half of course and having to wait for responses for full minute."
>
> I think the software (instructional material) in this way was probably the weaker of the elements in a day's programming. Timing was too slow. Item questions were too long. Answers were at times obvious. I hope that these trial runs will provide suggestions which will assist future revision."
>
> "Students preferred the scripts over the headsets. They felt too many questions were ambiguous and irrelevant."
>
> "Questions, situations etc. should be kept to a minimum (brief) and also the responses. This would allow for more points to be covered relating to the lecture and increase the effectiveness of the review. The technology is new and tends to overwhelm the teachers for a few weeks."
>
> "The four-channel audio speaker spoke too fast."
>
> "Too often there was a feeling that the questions could have been answered without ever seeing the TV lesson. Hence a need to relate the questions more directly to the telecast."

Overall, the consulting faculty rated the audio review as being acceptable. Their average rating was 3.44. Their written comments suggested that sometimes the instructional activities did not deal sufficiently with the topics the audio review dealt with and that some questions were ambiguous as to the correct response.

> "At times learning activities did not provide students sufficient knowledge with which to recognize discrete differences among alternatives."
>
> "Discrimination of response choices was often unclear. Students had no opportunity to explain their selection."
>
> "Generally good."

The response of the participants to the questions asked during the audio review were to be recorded two ways. The responses were recorded on Op-scan sheets by the participants, and the alternatives selected via the response buttons were to be automatically recorded on magnetic tape at seven of the classroom sites. The equipment that was to automatically record and decode the responses was engineered incorrectly and the recorded data could not be decoded. The participant responses from the Op-scan sheets are summarized in Table 9.

The proportion of participants that selected the correct alternative ranged from .43 to 97. For two-thirds of the items in Table 9, 70% or more of the participants selected the correct response. It may be concluded that generally the questions asked were easy to answer. The questions were designed to reinforce the concepts of the video programs thus it is appropriate that a significant number of participants answered the questions correctly.

TABLE 9

AUDIO REVIEW QUESTIONS: CEE COURSE

Program	Questions	Proportion Selecting Alternative				Number of Students
		1	2	3	4	
1	1	.23	.01	.76*	.00	232
	2	.01	.00	.13	.86*	232
	3	.02	.02	.94*	.02	232
	4	.75*	.16	.08	.01	232
2	1	.80*	.02	.13	.05	220
	2	.98*	.01	.00	.01	220
	3	.01	.00	.00	.99*	220
	4	.00	.01	.49*	.50	220
3	1	.00	.01	.97*	.02	227
	2	.05	.08	.01	.93*	227
	3	.05	.05	.81*	.09	227
	4	.01	.02	.82*	.15	227
4	1	.08	.87*	.01	.04	143
	2	.01	.07	.01	.91*	143
	3	.04	.26	.07	.63*	143
	4	.27	.57*	.03	.13	143
5	1	.01	.12	.19	.68*	227
	2	.00	.09	.88*	.03	227
	3	.02	.02	.62*	.34	227
	4	.03	.88*	.00	.10	227
6	1	.82*	.03	.13	.02	213
	2	.91*	.12	.13	.04	213
	3	.12	.07	.02	.79*	213
	4	.26	.02	.71*	.02	213

*Correct answer

TABLE 9 -- CONTINUED

Program	Question	Proportion Selecting Alternative				Number of Students
		1	2	7	8	
7	1	.10	.70*	.14	.06	145
	2	.08	.03	.31	.58*	145
	3	.21	.27	.09	.93*	145
	4	.07	.81*	.07	.05	145
8	1	.01	.42	.52*	.05	222
	2	.02	.01	.00	.97*	222
	3	.05	.92*	.03	.00	222
	4	.79*	.05	.16	.00	222
9	1	.07	.38	.48*	.06	227
	2	.02	.61*	.08	.29	227
	3	.71*	.24	.04	.01	227
	4	.01	.22	.77*	.00	226
10	1	.00	.38	.61*	.01	211
	2	.29	.01	.68*	.02	211
	3	.03	.41	.53*	.03	211
	4	.21	.72*	.01	.06	211
11	1	.00	.00	.96*	.04	226
	2	.04	.05	.72*	.19	226
	3	.01	.00	.18	.81*	226
	4	.01	.07	.24	.67*	226
12	1	.00	.01	.02	.47*	226
	2	.87*	.12	.01	.00	226
	3	.00	.00	.63*	.37	226
	4	.02	.81*	.02	.15	226

*Correct answer

Laboratory and Other Activities

The factor analysis of the Laboratory Activities Questionnaire (LAQ) indicated five groupings of items that were descriptive of the participants' reactions to the laboratory activities. The five factors were: 1) adequacy of time and facilities available and appropriateness of amount of material covered during the laboratory (high rating indicates adequate and appropriate); 2) usefulness of laboratory as a hands-on illustration of lecture concepts (high rating indicates useful); 3) usefulness and attractiveness of the laboratory content to the participants (high rating indicates useful and attractive); 4) helpfulness of the site coordinator (high rating indicates helpful); 5) clarity of the purpose and directions for doing the laboratory. The factor means are presented in Table 10 and the item means are presented in Appendix B, Table D.

To aid in interpreting the LAQ data the programs were ranked from high to low on each factor. The ranking are presented in Table 11. To see if there was any consistency in the program rankings across factors, Kendall's coefficient of concordance was computed (Hayes & Winkler, 1971, pp. 849-852). The value obtained for W was .273. This value indicates a low degree of similarity in the order of ranking across factors. For each factor, program means that were significantly different at the .05 level from the grand mean for the factor are marked with an asterisk (*) in Table 11.

The laboratory activities that were rated highest on one or more factors were 1&2, 5, 11, and 12. Of these only 1&2, 11, and 12 appear high on more than one factor. The laboratory activities that were rated

TABLE 10

FACTOR MEANS ON LABORATORY ACTIVITIES QUESTIONNAIRE: CEE COURSE

Factor	Items on Factor	Laboratory							
		1&2	3&4	5	6&7	8&9	10	11	12
1) Adequacy of time and facilities available and appropriateness of amount of material covered during laboratory	10, 11, 14, 18, 19	3.99	3.53	3.63	3.53	3.83	3.79	4.14	4.08
2) Usefulness of laboratory as a hands-on illustration of lecture concepts	1, 8, 9, 21	3.71	3.39	3.90	3.51	3.13	3.09	3.65	3.62
3) Usefulness and attractiveness of the laboratory content to the participants	3-5, 13, 17, 20, 22	4.05	3.61	3.95	3.76	3.95	3.76	3.96	3.89
4) Helpfulness of the site coordinator	2, 12, 15, 16	4.06	3.43	3.68	3.73	3.68	3.77	3.98	3.98
5) Clarity of the purpose and directions for doing laboratory	6, 7	4.42	3.91	4.28	4.29	4.23	4.22	4.34	4.39

TABLE 11

RANKING OF FACTOR MEANS FOR LABORATORY ACTIVITIES QUESTIONNAIRE: CEE COURSE

Ranking	Factor									
	1		2		3		4		5	
	Program	Mean	Program	Mean	Program	Mean	Program	Mean	Program	Mean
1	11	4.14*	5	3.90*	1 & 2	4.05*	1 & 2	4.12*	1 & 2	4.06*
2	12	4.08*	1 & 2	3.71*	11	3.96	12	4.39*	11	3.98*
3	1 & 2	3.99*	11	3.65*	5	3.95	11	4.34	12	3.98*
4	8 & 9	3.83	12	3.62	8 & 9	3.95	6 & 7	4.29	10	3.77
5	10	3.79	6 & 7	3.51	12	3.86	5	4.28	6 & 7	3.73
6	5	3.63*	3 & 4	3.39	6 & 7	3.76	8 & 9	4.23	5	3.68
7	3 & 4	3.53*	8 & 9	3.13*	10	3.76	10	4.22	8 & 9	3.68
8	6 & 7	3.53*	10	3.09*	3 & 4	3.61*	3 & 4	3.91*	3 & 4	3.43*

*Significantly different from grand mean for factor at .05 level

lowest on one or more factors were 3&4, 5, 6&7, 8&9, and 10. Of these only 3&4 appear low on more than one factor. Generally, then it may be concluded that laboratory activities 1&2, 11 and 12 were the best received activities, and that laboratory 3&4 was the poorest. If we look at the content of these activities (see Appendix A, Item B) a clear distinction can be made between the high and low rated laboratories. Laboratory 1&2 dealt with with the making of a "Life Rope." This was a small group activity with a lot of personal interaction and discussion. Laboratories 11 and 12 were also small group activities that dealt with stereotyping. In laboratory 11, the participants did role playing of stereotypes in the world of work. In laboratory 12, they discussed stereotypes they had observed during interviews they had made during the previous week. Thus, the best rated laboratories were the ones that encouraged interaction between participants, provided for discussion and sharing of experiences, and included small group activities.

The poorest rated laboratory dealt with the development of job clusters and the development of a collection of employer and job descriptions of the Appalachian region called the "Yellow Pages of the Working World." This laboratory consisted of reading and research about job clustering schemes and an explanation of how to gather employer and job availability data.

Factor 5 on the LAQ is a measure of the student's perceptions of the helpfulness of the site coordinator. As indicated in Table 11, site coordinators were generally thought to be quite helpful during the laboratory activities. The range of mean responses was from a low of 3.91

for the laboratory for programs 3 and 4 to a high of 4.41 for the laboratory for programs 1 and 2, with a mean of 4.26. Students tended to be consistent in their rating of the site coordinator's helpfulness.

Item four on the IFQ (see Appendix B, Table B) asked the participants to compare the laboratory activities to laboratory experiences they had in other college courses. The means for the three administrations of this item are 3.71, 3.54, and 3.64. These ratings indicate that the participants felt that the CEE laboratory activities could be favorably compared to those from other courses.

Participant comments in the IFQ that related to the laboratory sessions were generally very positive especially towards the practical utility of many of the activities. The interaction with other teachers was also seen as a positive aspect.

> "Very helpful. I can very definitely see how I will be able to apply these activities in my own classroom."
>
> "All practical experiences for later use."
>
> "Most of the activities were very interesting. I could see direct application to my teaching situation."
>
> "It has been very interesting and helpful working with the other teachers. There has been a lot of brainstorming and exchanging of ideas."
>
> "Interesting but sometimes we found ourselves disorganized, not knowing what to do."
>
> "Need more directions and explanations."
>
> "All of the activities are great. Need more time to do them."
>
> "There were too many activities in addition to the learning packages."
>
> "Discussion with groups and working 'hands-on' more valuable than readings. Readings are important but not if there can be no discussion, etc."

"Took much time in written work. I had little time for recreation."

"Not enough correlation between laboratory activities and TV program."

Site coordinators comments on the SR were very positive; however, they felt that the directions could have been clearer for some sessions, and that more time was needed for discussion.

"Best part of course. Concentrate on activities teachers can use with child. Life-line activity was one of the best. Whoever designed these activities was creative and imaginative."

"Excellent."

"Students indicated that these (especially when discussion was a part) were most valuable component of the course."

"The lab activities were excellent. The mature student can benefit greatly from such activities."

"Very well received. Suggest site monitor have an advanced copy of activities requiring special equipment and/or instructions such as Week 7 - stereotyping waste paper retrieval activity. Nothing to site monitor specified full cans and did not know what students would be doing since these instructions were in the student packages."

"The course materials were excellent; need more materials in the area of information searches, guides, etc. Directions for some units should be clarified."

"More time needed for discussion, talking with other, sharing ideas - more time for class interaction."

The consulting faculty members rated the laboratory activities on the SR as excellent (average rating 4.80). Their comments reinforce this rating.

"Excellent--provided sufficient opportunity for transfer of learning."

"Excellent."

"Well planned. Held general interest of students."

In conclusion, the laboratory activities were considered to be generally very good; however, the best sessions were those that emphasized in-class activities, small group participation and interaction and discussion among the participants. In some cases, the directions needed to be clearer.

Two major components of the laboratory activities were 1) the availability of computer-assisted information retrieval systems and 2) a reference library at each site that contained all necessary materials to carry out the laboratory activities.

There were two retrieval systems available to the participants; Computer Based Resource Guide, and Educational Research Information Centers (ERIC) and AIM/ARM tape files. Descriptions of the information systems employed and how they were used by the participants are contained in AESP Technical Report #2 (Ausness and Bowling, 1974, pp. 20-22). To use the information systems, participants requested information searches by mailing a request form to the University of Kentucky. The search was processed and the information returned by mail.

The reference library contained materials, books and test instruments necessary for the participants to complete the laboratory activities. Included in the reference library were sample information retrieval searches run for a variety of career education topics. Also included were sample curriculum plans illustrating career education applications in the classroom. It also contained supplementary materials that expanded upon the basic program.

The Information Systems User Satisfaction Questionnaire (ISUSQ) was factor analyzed and four factors were obtained. The factors are: 1) value of information obtained from information systems (high ratings indicate high value); 2) information systems were useful as information sources (high ratings indicate useful); 3) adequacy of explanation and ease of use of information systems (high ratings indicate adequate); and 4) length of time to get information back (high rating is acceptable length of time). The factor means are presented in Table 12 and the item means are presented in Appendix B, Table E. The participants' ratings on factors two and three (3.17 and 3.12 respectively) indicate that they felt that the information systems were not highly useful as sources of information, that the procedures for use were not explained adequately, and that the information systems were not easy to use. Factor one has a mean of 3.59, and it appears that the participants were positive towards the information they got from the information systems even though they generally unimpressed with them as information sources. In other words the participants liked the information they received but did not like the way in which they had to go about getting the information. Finally, on factor four the mean is 2.80, and apparently the participants were unimpressed with the speed of receiving information back from the information systems.

TABLE 12

FACTOR MEANS FOR INFORMATION SYSTEMS USER SATISFACTION QUESTIONNAIRE
CEE COURSE
(N=198)

Factor	Items on Factor	Factor Mean
1) Value of information obtained from information systems	7-10, 13-18	3.59
2) Information systems were useful as information sources	20-25	3.17
3) Adequacy of explanation and ease of use of information systems	1-4, 11, 12	3.12
4) Length of time to get information back	5, 6	2.80

Item six on the IFQ asked the participants to compare the information systems to materials supplied in other courses. The means for the three administrations are all positive (3.76, 3.64, 3.59) and indicate that the participants were favorably disposed towards the information systems as compared to materials supplied in other courses. Participant comments on the IFQ indicate that they felt the information systems were not explained clearly and that they had insufficient opportunity to use them.

> "Although I'm still somewhat uncertain as to how to go about employing these (retrieval systems) I feel we will need practical application of these under supervision before we feel comfortable using it."
>
> "Want more time to investigate for search."
>
> "The system is too unnecessarily complicated."

"I would like to have had time to become better acquainted with this system. Seems to have a potential use for educators."

"I didn't really get much of a chance to use these materials. We made out one simulated request but that was all."

"Great but I didn't take enough advantage of the offering."

"Couldn't use them during course."

"I did not use this method."

Site coordinators comments from the SR reinforce the participants comments.

"Activities dealing with information systems were the weakest, most complaints from students."

"The retrieval section needs to be reworked and expanded."

"AIM/ARM should be more fully explained. Copies of the basic information retrieval methods and system should be made available to each teacher."

In conclusion, the information systems needed to have been explained more fully and more time should have been allotted to their use.

Item five on the IFQ asked the participants to compare the on-site reference materials with materials provided in other courses. The means for this item are positive (4.11, 3.83, 3.93) and indicate that the participants were pleased with the on-site materials provided. Participant comments on the IFQ were generally very positive towards the on-site reference materials. Several participants felt the materials were insufficient for the upper elementary grades.

"Materials provided at site are excellent resource guides compared to most courses."

"Excellent resources--easy to find and locate."

"Materials are exciting and stimulating."

"Lots of materials--can be borrowed freely. Excellent."

"Materials up to date which is sometimes not the case with reserve materials. Need time system to have materials reach all class members."

"More reference material is needed for upper elementary."

"There are not as many materials dealing with the upper elementary grades as there are with the first three grades."

"Very good, but only one microfiche reader."

Two final aspects of the course were rated by the participants on the IFQ. There were 1) pre-program preparation compared to work assigned in other courses and 2) homework assignments compared to other classes. The pre-program preparation and homework assignments for each class meeting are outlined in Appendix A, Item B.

The pre-program preparations were usually readings to be completed prior to class. Participants' reactions to this were measured by item one on the IFQ. The means (3.48, 3.25, 3.51) indicate a positive reaction to the pre-program preparation. Item 8 on the IFQ dealt with homework. The means for this item (3.66, 3.41, 3.62) reflect a positive reaction.

The major homework assignment was the development of a learning package. In this package the participant was to illustrate how he would introduce career education concepts into his teaching. Some participants felt that they did not have sufficient time to complete the learning package and do the pre-program preparation and other homework assignments. However, they did feel that the assignments were useful and valuable.

"I must spend so much time on my learning package that I find it difficult to do all the reading I want to do."

"Today's homework assignment does not help me do my units and learning activities."

"There was not enough time in the summer session to complete all activities."

"I would have liked less work assignments, so as to develop a more useable career package. The activities and assignments were very well thought out and relevant."

"The learning package should be very beneficial to my school."

Televised Live, Interactive Seminars

The Seminar Questionnaire (SQ) was factor analyzed and five factors were obtained. The factor means are presented in Table 13 and the item means are presented in Appendix B, Table F.

TABLE 13

FACTOR MEANS ON SEMINAR QUESTIONNAIRE
CEE COURSE

Factor	Items on Factor	Seminar			
		1	2	3	4
11) Quality of presentation style of seminar	2, 7-12, 19, 20	3.54	3.68	3.73	4.05
2) Value of information communicated during seminar	13-16, 18	2.65	2.89	2.99	3.18
3) Adequate opportunity to ask questions	3, 5, 6, 15	3.75	3.90	4.00	4.07
4) Important questions were asked by participants	4	2.50	2.49	2.74	2.89
5) Proper time in course sequence for seminar	17	3.52	3.81	3.84	4.06

Factor one deals with the quality of the seminar presentation. Generally the participants felt that the quality was moderately high and that the quality improved as the course progressed. This is seen in the gradual increase in the factor means across seminars: 3.54, 3.68, 3.73, and 4.05.

Factor two deals with the value of the information communicated during the seminars. As indicated by the ratings of 2.65, 2.89, 2.99, and 3.18 participants were unimpressed with the value of this information.

Factors three and four are related in that factor three deals with the adequacy of opportunity to ask questions of the seminar guests and factor four deals with whether or not important questions were asked by the participants. The participants felt that they had adequate opportunity to ask questions (as reflected in means of 3.75, 3.90, 4.00, and 4.07), but that important questions were not asked (as reflected in means of 2.50, 2.49, 2.74, and 2.89). Some data are available to illustrate the frequencies of questions transmitted from the sites for seminars. On the average, 85 questions were received and 20 questions were answered over the air during the seminar (the remaining questions were answered via teletype after the seminar broadcast).

Factor five dealt with whether or not each seminar was broadcast at an appropriate time in the course sequence. The participants ratings (3.52, 3.81, 3.84, and 4.06) indicate that the seminars were broadcast at appropriate places in the course sequence.

Item seven on the IFQ asked the participants to compare the televised seminars with the seminars and class discussions from other

classes. The means for the three administrations are 3.23, 3.16, and 3.40. From these it may be concluded that the participants rated the seminars as being similar to seminars and class discussions from other courses. Participant comments from the IFQ indicated that the opportunity to see and hear experts in the field was valuable.

> "Very good to have authors of materials and educators in career education answer questions from students."
>
> "Provides enthusiasm--contact with various experts, not otherwise available."

However, some participants felt that more classroom teachers should have been included on the panel.

> "Time is monitored well. How about getting some classroom teachers, they're experienced in the reality of the situation and are the REAL EXPERTS."

Participants also felt a lack of personal contact and that they were not getting direct answers to their questions.

> "Panel appeared to be experts in answering questions to the moderator. We did not really feel that they were talking to us personally or answering questions that we needed to have answered."
>
> "Real live, in-person seminars can be of better quality.
>
> "Seminar panel should make as concise, specific answers to student questions as possible and then enlarge on the explanation if necessary."
>
> "I had the feeling they covered only areas they had prepared. Individual questions seemed to be disregarded."
>
> "Lack of humaness. Can't ask direct questions or disagree."
>
> "I would like to react right away to speakers."

The last seminar (#4) was considered the best by the participants.

> "Last seminar was best because the two panelists gave straight-forward answers. They left out the educational 'jargon'."

"Good selection of questions in providing a broad range of problems which were helpful."

"The seminars became progressively better. Seminar 4 was very worthwhile."

The site coordinators, on the Summative Report Form (SR), also felt that the seminars improved with time, and that questions were not answered directly.

"Seminar was excellent; very informative, and it was nice to see format working for all sites in this area."

"Third and fourth seminars best received and most beneficial. Selection of panel members made the difference. Moderator did excellent job of keeping seminars moving. Suggest one-hour seminars instead of 45-minute seminars."

"Concentrate on classroom teachers as guests."

"The seminars started poorly, but improved continually. The responses to questions should be short and brief and to the point. Many times panel members talked around the answers. The moderator should be conscious of the time taken in response to questions. Some of the time was taken defending a position and this should not be the purpose of the seminars. It is difficult to poll questions prior to and during the seminars, therefore, a plan should be developed."

"With four seminars, it is difficult to generalize. They got much better by #3. The teachers felt that #3 addressed their questions, and it held in with the video and ancillary activities."

"Students were unhappy because panelists did not respond to them directly, rather talked among themselves."

"Speakers generally good and interesting."

"The seminars just did not make it with the students. They seemed restless and uninvolved with few exceptions. The seminars lacked the finess and quality of commercial TV interview programs. We should consider moving closer toward professional personnel."

The consulting faculty members rated the seminars as sometimes excellent (average rating 4.24). Their comments from the SR indicated a lack of interaction and insufficient time spent on career education in rural areas.

"At times too general."

"No real dialogue. Needs to be more interaction and discussion between and among the panel members."

"I feel that more small town and rural area career education programs should have been discussed, since the majority of teachers in class work in such schools. Seminars could be longer."

In general, it may be concluded that the seminars were broadcast at appropriate times in the course sequence, were of high quality and that the participants had ample opportunity to ask questions. However, the participants felt that the questions asked were not important and that the value of the information obtained was not high. However, the quality and usefulness of the seminars increased from the first seminar to the last. The final seminar (#4) was regarded as being very worthwhile and the participants felt that useful information was discussed.

Reactions to Evaluation Materials

The general reaction to the evaluation design by the site coordinator and consulting faculty was that it was comprehensive and well organized, but that too many observations were taken on too many different forms. The participants understood the need for evaluation, but after a while they tended to respond to the instruments without much thought about their replies. The site coordinators' comments follow:

"The volume of evaluation forms seemed heavy, but the students never responded with excess criticism to the opportunity. The purpose was well served."

"Vary the format. Many answered without much thought after the fourth week."

"Teachers recognize the need for these forms, but could do without them. Generally their attitude has been excellent."

"Forms flowed freely. Perhaps more random sampling would result in less data contamination, I'm a great advocate of evaluation, feeling it's a vital part of the instructional development process. In this course, however, there were so many forms, that I believe some people were overwhelmed. Confusion persisted in the 1 - 5; D - A scales."

"There was an excessive amount of additional paper work the students greatly disliked. Also, instead of the paper being wasted why not give each person one set of all questionnaires for the entire course."

"The forms were excellent, but the students definitely got tired of filling them out, and I feel that there were too many forms to be filled out - some of them were repetitious."

"Too many forms, some questions on the forms were not applicable to the situations in question. Evaluation should be tied to a common definitive scale with identifiable standards (e.g. quality of video quality of compared to what?)"

"Unanimous agreement of participants that there was far too much evaluation. Some resentment at having the same forms for each small event of the day evaluated over and over. I believe the constant repetition blinded some of the group to the fact that the evaluation forms were well constructed and were really good."

The consulting faculty rated the evaluation forms as being acceptable (average rating 3.25). They did feel that there were too many forms.

"Comprehensive."

"Too many, too often."

"Students felt that these were highly repetitious, hence they became bored and tended to lose interest."

"Is it really necessary to have quite so many forms to evaluate this program?"

In conclusion, the evaluation design was too comprehensive. The number and frequency of forms filled out by the participants needs to have been reduced. Certain forms (e.g., QTVR and UFCA) could be filled

out by the site coordinator since they dealt generally with the observation of picture and sound quality. The use of sampling schemes so that only a few participants filled out forms would spread the task out and make it less objectionable.

Reactions to Unit Tests

At the beginning of each class session the participants were given short unit tests. These were multiple choice tests of 10 to 12 items that sampled the content from the last week's video programs and laboratory activities. They did not count towards the participants' grades. For a discussion of the purpose and development of the unit tests see AESP Technical Report #4 (Bramble et al, 1974, pp. 5-9). The unit tests were used as an evaluation tool to measure unit learning and as an instructional aid. The participants were able to check their answers after they completed their tests and discuss the answers with other course participants. For a discussion of participant performance on the unit tests see AESP Technical Report #9 (Marion, Bramble, and Ausness, 1975).

Item 9 on the IFQ asked the participant to compare the unit tests to instructor made tests in other graduate classes they had taken. The means for the three administrations of the IFQ were 3.72, 3.15, 3.48. From this it may be concluded that the participants attitudes were generally positive towards the unit tests. Participant comments regarding the unit tests from the IFQ indicated that while they liked the feedback on their answers, they felt that often the questions were either not related to the televised programs they saw or were so subjective that several answers appear to be correct.

"I like having immediate feedback with reasoning. I miss having a teacher to argue with when I disagree with the right answer. Sometimes conflict over test questions, etc., causes the course offering to be clarified for other students as well as myself."

"Tests appear to be better learning instruments than most tests."

"Tests are not on materials covered by the video."

"Tests are poorly constructed. Too many opinions."

"Do not relate to TV programs--not consistent or show individual work in own communities."

"Too subjective. I find questions with practically every test question and response."

"So many of the unit test questions covered materials we had not yet covered."

"Most could have been answered without the TV presentations. Many of us disagreed with your answers."

"The tests were very outstanding and coincided with the course."

"Overall, the tests were well constructed and provided the student with a wealth of information. The quick feedback was very helpful."

"Many answers it seemed to me were ambiguous in nature."

"The unit tests were comprehensive and provided a good review."

"About average. Many questions, however, were very poorly stated."

The site coordinators felt that the unit tests were a good idea, that they generated discussion, and were a good review. However, they felt that the ambiguity of the questions caused great participant frustration.

"The unit tests served as a valuable reinforcement for the program."

"Unit tests served well in providing review. Students received the opportunity to review and check their answers with enthusiasm."

"No comment--caused discussion in class which is a good factor."

"Tests were good follow-up activity."

"This is a good method of evaluation, but students were concerned over many questions and the desired responses."

"Students recognized instructional value, but grew weary of the repetitiveness."

"Here I think there is a need for careful rewording of some questions. Teachers became very frustrated by the use of negatives, double negatives and specific answers to questions which they considered quite general."

"This was an area of greatest frustration. Students could not see tie-in or relationship between unit tests and lectures, activities, etc. So often contained information that had not been covered or could not be reported on form provided."

"A couple of times tests seem to require subjective answers."

"There was some disagreement about the correct responses."

The consulting faculty rated the unit tests as being excellent at times (average rating 4.0). Their comments are similar to the site coordinators.

"At times, some unit test questions were not closely related to lectures."

"Unit tests seemed well devised."

"Fairly comprehensive. At times these tended to cause student anxiety."

In conclusion, the unit tests were seen as helpful as a reinforcement tool, but they suffered from being ambiguous and not closely related to the televised programs.

CONCLUSIONS

The following is a summary of conclusions regarding participant attitudes toward CEE course activities.

- Videotaped programs in the first half of the course were rated as better than those in the latter half of the course. Revision of some of the later videotapes is advisable.

- Overall, the videotaped programs were rated as slightly better than typical campus lectures.

- The immediate feedback nature of the four-channel audio review was the best liked feature of that activity.

- The students generally liked the audio review; however, some questions were felt to be ambiguous, subjective and not related to the video programs.

- The laboratory activities thought to be most interesting activities were organized around small group projects and encouraged discussion and interaction among the participants.

- The information systems needed more careful explanation and more time devoted to them in order for the participants to be able to appreciate such resources.

- The on-site reference materials were felt to be adequate and very useful.

- The live, interactive seminars were rated as being similar in quality to on-campus seminars; however, they were seen as somewhat impersonal.

- The opportunity to see and hear experts in career education was regarded as a strong point of the seminars.

- The value of the information received from the seminars was regarded initially as somewhat low; however, with subsequent seminars, their value and utility was felt to increase.

- The evaluation design included too many forms. Revision of the design to include fewer administrations of fewer forms is suggested.

APPENDICES

APPENDIX A

Item A

Televised Program Titles and Descriptions of Material Covered

PROGRAM 1 - THE CONCEPT OF CAREER EDUCATION

This introductory program is designed to demonstrate the need for career education and to offer a "basic tenets" definition of it. In so doing, it touches upon both educational and general social needs, recent history of career education, several prominent definitions and the overall philosophy of career education.

PROGRAM 2 - A COMPLETE CAREER EDUCATION PROGRAM

In this program selected examples of career education oriented classroom sessions demonstrate the actual implementation of this concept throughout the school system (kindergarten through 12th grade and beyond). The specificity of these examples enhance the working definition of career education from the previous program and as an overview, introduce items to be treated later in the course (e.g. child development and career development theories and sequencing). This presentation should leave the student with the basics of the total scope of career education from awareness to exploration to preparation and beyond high school.

PROGRAM 3 - JOB CLUSTERING: A TOOL FOR CAREER EDUCATION

This presentation demonstrates the need to order and sequence the vast world of work for students. Clustering is introduced and defined as a major tool for the teacher to use in this effort. Although several types of available clustering systems are mentioned, the major portion of the program is devoted to offering the audience a single clustering system to use as a guide to career education in their own classroom.

PROGRAM 4 - INTEGRATING CAREER EDUCATION INTO THE CURRICULUM

This program gives the detailed steps needed for integrating a single career education experience into the academic curriculum. As a "how to" primer it shows the teacher how to establish career education goals and plans in language arts. While the program offers a set of examples appropriate to an ideal situation, the student receives a formalized integration process which he/she can easily adapt to individual classrooms.

PROGRAM 5 - TOTAL CURRICULUM INTEGRATION

This program reinforces and builds upon that information and those efforts discussed in Program 4 by expanding the sample integration scheme into the academic subject areas of science, math, and the social sciencess. In doing so, it offers a set of examples that represent total curriculum integration in an ideal situation, and gives the teacher a view of integration in a complete curriculum unit. With the information developed in Programs 4 and 5, the student has a sound, practical, base for integrating career education in the classroom.

PROGRAM 6 - THE COLLECTION AND UTILIZATION OF INSTRUCTIONAL MATERIALS

This presentation focuses on various types of resource materials available to the classroom teacher for use in infusing career education into the classroom. Concerning commerical materials available, the program offers guidelines on how to assess and utilize film strips, study kits. Too, the program presents a host of ideas and resources the teacher can use in creating his/her own materials for career education.

PROGRAM 7 - COMMUNITY RESOURCES

This program asserts the importance of community involvement as both a valid input to educational change and as an extremely fruitful resource area. It focuses on the actual classroom use of the community as a resource and the importance of the teacher's role as a liaison between the community and the student.

PROGRAM 8 - IMPLEMENTATION STRATEGY (for the School System)

This presentation describes the roles that must be assumed by everyone in the school in planning and implementing a total career education program. Beyond the individual classroom teacher, this would include curriculum task force committees, guidance counselors and administration personnel.

PROGRAM 9 - ATTITUDES ABOUT CHANGE

This program acquaints the teacher with the attitudes, both pro and con, that he or she must, at some time, deal with. As career education necessitates a form of educational change, it must invite and contend with the feelings, attitudes, and convictions of everyone--from the teacher in the next classroom to the community at large. It is the purpose of this program to display many of these points of view, and thus, aid each student in formulating his or her own ideas.

PROGRAM 10 - DEALING WITH EDUCATIONAL CHANGE

Building on information from previous programs, this program demonstrates the necessity of community involvement in effectively dealing with concerns about educational change.

PROGRAM 11 - SPECIAL INTERESTS AND CAREER EDUCATION

Related to attitudes, this program centers on the needs of special concern groups such as labor, management, minority groups, and exceptional children. These are areas that must be considered in any plan for educational change.

PROGRAM 12 - THE REWARDS OF A COMPREHENSIVE CAREER EDUCATION PROGRAM

This presentation illustrates the implications of career education for the ultimate consumer, the student.

Seminar Participants in Career Education in the Elementary School

Elizabeth Alday:	Elementary School Coordinator, Falcnor County Schools, New York State
Robert Arceneaux:	Superintendent, Adult and Career Education, Lafayette, Louisiana
Gene Bottoms:	Director, Division of Program and Staff Development for the Georgia State Department of Education
Marie Burrow:	Director of Career Education, St. Louis, Missouri
Gino Carlotti:	Vocational Counselor, Erie, Pennsylvania
Owen Collins:	Career Education Project Director, Hazard, Kentucky
Gary DuBois:	Director of Alternative School, Cassadagau, New York
Henry Durant:	Director of Career Education, McKeesport, Pennsylvania
Brian Fluck:	Director of Vocational Education, Endsburg, Pennsylvania
William D. Hathaway:	Senator, Maine
Ken Hoyt:	Director, U.S. Office of Career Education
Phillip Laguidice:	District Superintendent, BOCES, New York State
Darryl Laramore:	Supervisor of Vocational Guidance, Montgomery County Public Schools, Rockville, Maryland
Sidney Marland:	President, CCEB
Dan Nasman:	Career Education Project Coordinator, San Diego, California
Jonathan Osborn:	Director, Comprehensive Care and Placement, Morristown, Vermont
Earl Smith:	Superintendent
Grant Venn:	Professor of Education, Georgia State University.

Item B

Summary of Materials Covered in Laboratory Activities

Session 1

PROGRAM 1 - The Concepts of Career Education
4-Channel Audio

PROGRAM 2 - A Complete Career Education Program
4-Channel Audio

Activities and Materials Needed

1. Life-ropes Activity Description
   - Old magazines
   - 4" x 6" index cards
   - Crayons or felt pens
   - Ball of string
   - Scissors

2. Laramore, Darryl, "The Classroom Teacher in Career Education", NASSP Bulletin, (activity)

3. Procedure for "Brainstorming" about Career Development

Assignments

Read: Marland, Sidney, "Career Education - More Than a Name"
Marland, Sidney, "The Need for Career Education"
Marland, Sidney, "Career Education Now"
Keller, Louise, Career Education In-Service Training Guide*

Session 2

PROGRAM 3 - Job Clustering
4-Channel Audio

PROGRAM 4 - Integrating Career Education into the Curriculum
4-Channel Audio

Activities and Materials Needed

1. Review the summary of USOE clustering system

2. Correlate the local resources with USOE clusters--local telephone directories

*This guide was provided to each student

3. Correspondence for information activity
   **An Analysis of 15 occupational clusters as identified by the U.S. Office of Education
   **Dictionary of Occupational Titles, Vol. 1-2.
   **Occupational Outlook Handbook
   **Encyclopedia of Careers, Vol. 1-2
   Stationary
   Envelopes

4. AIM/ARM Activities Description
   - Definition and Procedures Manual
   - Indexes and Abstracts
   - Microfiche
   - Microfiche Readers

Assignments

Read simple unit based on the health cluster.
Review questions to be polled for week #3.

Session 3

PROGRAM 5 - Total Curriculum Integration
4-Channel Audio

Seminar 1 - Curriculum Integration, Alternate Ideas
Special Problems
4-Channel Audio

Activities and Materials Needed

1. Read Class Project Description
2. Add-on Unit Sample and Procedure, Plan A
3. Infused Unit Sample and Procedure, Plan B
4. Career Education Media Procedure
5. Retrieval Systems Search Descriptions
   -AIM/ARM Training Manual
   -CBRU Reference Manual

Assignments

Begin research on your Career Education Learning Package

Session 4

PROGRAM 6 - Collections and Utilization of Instructional Materials
4-Channel Audio

PROGRAM 7 - Utilizing the Community as a Resource
4-Channel Audio

Activities and Materials Needed

1. "Hands-On" Activity Procedure
2. "Yellow Pages of the Working World" Procedure

Assignments

1. Develop "hands-on" activity
2. Begin assignment on "Yellow Pages of the Working World"
3. On-going research and development of Career Education Learning Package

For Your Information

Free and Inexpensive Learning Materials. George Peabody College for Teachers, Nashville, Tenn. 1970
Educators Guide to Free Films. 1970-71 ed. Educators Progress Service, Box 497, Randolph, Wisconsin, 53956.
Educators Guide to Free Filmstrips. 1970 ed.
Educators Guide to Free Materials. 1970 ed.
Educators Guide to Free Science Materials. 1970 ed.
Educators Guide to Free Tapes, Scrips, and Transcriptions. 1970 ed.

Session 5

PROGRAM 8 - Implementation Strategy for Career Education
4-Channel Audio

PROGRAM 9 - Attitudes About Change
4-Channel Audio

Activities and Materials Needed

1. Learning Center Procedure and Activity
2. Self Made Persons Procedure and Activity
   - Article, "Conviviality and Fate Control"
   - Article, "Tell Me Teacher"

Assignments

On-going reserach and development of Career Education Learning Package

Session 6

PROGRAM 10 - Dealing with Educational Change
4-Channel Audio

Seminar 2 - Problems in Program Planning
4-Channel Audio

Activities and Materials Needed

1. Hand in Yellow Pages of the Working World

2. Educational Change: Procedure for Part I, "Permanence"
   - Four large brown envelopes marked, "Educational Change: Part I" (one envelope per group)

   (Note to Site Coordinator: These materials are in your packet but are not numbered because they are not contained in the student's packets. They are contained in the brown envelopes listed above)

3. Educational Change: Procedure for Part II, "Stability Versus Change"

4. Educational Change: Procedure for Part III, "Process"

5. Educational Change: Procedure for Part IV, "Changed Objects"

Assignments

1. Complete pre-program questionnaire; due: week 7, August 6, 1974

2. Read article and supplementary questions regarding the roles of students and communities in planning curriculum change

3. On-going research and development of Career Education Learning Package

Session 7

PROGRAM 11 - Career Education and Special Interest Groups
4-Channel Audio

Seminar 3 - Assessing and dealing with Local Special Concerns
4-Channel Audio

Activities and Materials Needed

1. Stereotyping Instructions
   - Manila envelope entitled "Stereotyped Activity"

2. Stereotyping--Whole Group Discussion Topics

Assignments

1. Collection Data on Stereotyping; due: week 8, August 20, 1974
2. Read "The Problems with Stereotypes"

Session 8

PROGRAM 12 - The Rewards of a Comprehensive Career Education Program

Seminar 4 - Summary Discussion with National Career Education Authorities

Activities

1. Discuss Week 7 assignment; "Collecting Data on Stereotyping"

2. Read summary article: "Career Education: A Report." by Sidney Marland

3. Turn in Career Education Learning Packages

APPENDIX B

Appendix B contains tables of item means for all of the instruments reported on in the text. In each table, individual items and a paraphrasing of the item wordings are included. On the actual instruments some of the items were phrased negatively. In the tables the phrasing of the items has been changed and the means have been reversed to allow for the correct interpretation of the ratings. In the columns of these tables are the CEE programs. In the body of the tables are the item means. These were obtained by averaging over the number of individuals who responded to each item. For tables A, D and F statistical tests were run to determine which program means for each item were significantly higher or lower than the other program means. For Tables A and D contrasts were computed that compared one mean against the combined mean for the remaining means on that item. For Table F, Tukey - HSD tests on successive pairs of means were run for each item.

TABLE A

MEAN RATINGS ON TLQ: CEE COURSE

Item	Pretaped Program												Overall Item Mean
	1	2	3	4	5	6	7	8	9	10	11	12	
1. Satisfactory TV viewing condition	3.95	4.15	3.75	3.76	3.65	3.98	3.95	3.70	3.77	3.99	4.00	3.88	3.87
2. No difficulty seeing items on TV	4.30	4.35	4.37	4.32	3.75*	4.40	4.40	4.01	4.02	4.52*	4.49	4.19	4.26
3. Instructor spoke loud enough	4.24	4.41	3.60*	3.94	4.17	4.36	4.30	3.95	4.01	4.48*	4.50*	4.41	4.19
4. No difficulty seeing the TV	4.43	4.38	4.41	4.39	4.25	4.26	4.35	4.19	4.23	4.69*	4.47	4.20	4.36
5. Program held my attention	3.90*	3.72	3.62	3.76*	3.64	3.75	3.40*	2.75*	2.92	3.33	3.22	3.36	3.46
6. Material to be covered was identified	4.10	4.35*	3.95	4.11	4.06	4.11	4.07	3.75	3.89	3.73	3.90	3.99	4.01
7. Adequate transition between ideas	4.02	4.27*	3.99	4.09	4.06	4.18	4.05	3.71*	3.85	3.77	3.89	4.13	4.01
8. Learned a great deal from program	4.01*	4.14*	3.91	3.90	3.68	3.91	3.56	3.17*	3.19*	3.47	3.58	3.66	3.68
9. Graphics helped understanding	3.95	4.23*	3.98	4.15*	4.04	4.11*	3.82	3.25*	3.36*	3.39*	3.77	3.46*	3.80
10. Content well organized	4.41*	4.43*	4.15	4.22	4.06	4.16	4.06	3.80*	3.88	3.88	4.11	4.14	4.11
11. Materials were related to understandable examples	4.24	4.38*	4.08	4.18	4.14	4.15	4.12	3.68*	3.85	3.76*	4.11	3.96	4.06
12. No digression to unimportant details	4.37	4.31	4.15	4.21	4.11	4.29	4.08	3.99	3.94	4.04	4.22	4.19	4.17
13. Presentation not too complex	4.22	4.33	4.11	4.19	4.30	4.26	4.27	4.08	4.06	4.10	4.37	4.18	4.21
14. Presentation not too simplified	3.81	3.97	3.82	3.90	3.78	4.01	3.94	3.74	3.83	4.01	4.10	3.91	3.90
15. Instructor showed enthusiasm	4.00	4.13	3.96	4.08	3.91	3.93	3.98	3.57*	3.68	3.88	3.80	3.85	3.91
16. Usefulness of TV lecture	4.13	4.27*	4.06	4.28*	4.05	4.11	4.06	3.52*	3.55*	3.60*	3.68	3.89	3.95

TABLE A -- CONTINUED

Item	Pretaped Program												Overall Item Mean
	1	2	3	4	5	6	7	8	9	10	11	12	
17. Perceived correctness of TV lecture	4.67*	4.59*	4.26	4.46	4.31	4.44	4.44	4.09*	4.23	4.34	4.45	4.27	4.38
18. Pacing of subject matter	4.24	4.32	4.06	4.13	4.13	4.21	4.16	3.88	3.87	4.02	4.28	4.17	4.12
19. Instructor spoke clearly	4.26	4.33	3.67*	4.20	4.39*	4.12	4.15	3.78	3.95	4.14	4.37	4.21	4.14
20. Material was not too difficult	4.54*	4.42	4.12	4.34	4.32	4.33	4.27	4.13	4.08	4.24	4.38	4.27	4.30
21. Material was not simple	4.29	4.32	4.08	4.25	4.12	4.13	4.85	3.81*	3.87	4.18	4.14	4.21	4.13
22. Instructor did not speak in a monotone	4.10	3.89	3.75	4.00	4.00	3.88	3.91	3.83	3.83	3.78	3.87	3.83	3.89
23. Instructor did not speak in condescending manner	3.50	3.65	3.69	3.79	3.75	3.82	3.87	3.72	3.74	3.94	3.70	3.74	3.75
24. Picture was not distorted	4.27	4.31	4.24	4.30	3.49*	4.26	4.20	3.74*	3.73*	4.56*	4.50*	4.09	4.14
25. Program did not cover too much material	3.96	4.35	4.10	4.09	4.08	3.98	4.01	3.87	3.78	4.13	4.24	4.06	4.05
26. Like to use materials presented	3.71	3.95	3.93	4.13*	3.91	4.08	4.06*	3.65	3.42*	3.45*	3.60	3.74	3.82
27. Subject matter fundamental to the course	4.59*	4.63*	4.26	4.41	4.44	4.44	4.39	4.07	4.07	3.94*	4.15	4.27	4.31
Number of Subjects	105	99	103	157	110	91	161	102	106	102	103	110	

*The mean is significantly different (.005 level) from the average of all other means for the item (the overall α level is .05)

Note: 5-point Likert scale 1 = strongly disagree -- strongly agree

TABLE B

ITEM MEANS AND STANDARD DEVIATIONS FOR IFQ: CEE COURSE

Item		Program Numbers			Overall Item Mean
		1 - 5 & Sem 1	6 - 10 & Sem 2	11 - 12 & Sem 3 & 4	
1. Pre-Program preparation compared to work assigned in other graduate classes	Mean	3.48	3.25	3.51	3.42
	s.d.	.84	.81	.85	
	N	216	179	217	
2. TV Program compared to a graduate lecture	Mean	3.65	3.28	3.50	3.49
	s.d.	.97	.90	.94	
	N	215	179	216	
3. Four-Channel Audio compared to class quizzes followed by a discussion of the answers	Mean	3.52	3.24	3.46	3.41
	s.d.	1.04	1.22	1.09	
	N	194	177	216	
4. Ancillary activities compared to laboratory activities in other graduate classes	Mean	3.71	3.54	3.64	3.63
	s.d.	.84	.84	.87	
	N	217	178	216	
5. On-site reference materials compared to materials placed on reserve by other graduate instructors	Mean	4.11	3.83	3.93	3.96
	s.d.	.88	.96	.89	
	N	216	179	216	
6. Retrieval systems materials compared to materials other graduate courses use to help students	Mean	3.76	3.64	3.59	3.66
	s.d.	.94	.96	.98	
	N	189	150	201	
7. Televised interactive seminars compared to graduate seminars and class discussions	Mean	3.23	3.16	3.40	3.27
	s.d.	1.06	1.08	1.15	
	N	189	153	200	
8. Homework assignments compared to other graduate classes	Mean	3.66	3.41	3.62	3.57
	s.d.	.80	.87	.78	
	N	190	153	200	
9. Unit tests compared to instructor made tests in other graduate classes	Mean	3.72	3.15	3.48	3.47
	s.d.	.86	1.13	1.10	
	N	190	151	199	

Note: 5-point Likert scale 1 = unacceptable -- 5 = outstanding

TABLE C

MEAN RATINGS ON UFCA: CEE COURSE

Item	Pretaped Program											
	1	2	3	4	5	6	7	8	9	10	11	12
1. Volume was satisfactory	Four-Channel Audio review equipment either not installed or operating at an intermittent level.*							4.22	4.32	4.54	4.49	4.55
2. Voice quality was undistorted								3.67	3.77	4.09	4.39	4.00
3. Heard only one answer at a time								3.29	3.34	3.96	4.22	4.64
4. Sufficient time to put on headset								4.62	4.53	4.49	4.62	4.68
5. Sufficient time to select answer								4.52	4.49	4.52	4.66	4.57
6. Answer not cut off								4.58	4.52	4.70	4.74	4.76
7. Received answer selected								4.10	4.02	4.34	4.28	4.66
8. Equipment not hard to use								4.34	4.31	4.55	4.71	4.64
9. Enjoyed using 4-channel equipment								3.63	3.34	3.88	3.79	3.95
10. Speaker did not speak too fast								4.35	4.43	4.11	4.48	4.52
11. Speaker spoke clearly								4.37	4.38	4.27	4.35	4.43
12. Content was relevant to unit topic	4.39	4.42	4.29	4.38	3.97	4.04	4.07	3.89	3.66	3.84	4.14	4.20
13. Content helped me understand video	4.14	4.12	4.40	4.19	3.55	3.62	3.59	3.70	3.28	3.46	3.64	3.75
14. Content helped me understand materials presented in video	3.47	3.66	3.93	4.18	3.78	3.47	3.39	3.32	3.12	3.21	3.41	3.56
15. Explanations to questions were clear	3.86	4.16	4.13	3.95	3.91	3.94	3.67	3.76	4.68	3.78	4.14	4.32
16. Explanations were thorough	4.02	4.22	4.42	3.95	3.83	3.83	3.67	3.93	3.82	3.80	4.03	4.24
17. Explanations were interesting	3.96	4.08	4.28	4.02	3.75	3.77	3.76	3.68	3.42	3.69	3.88	4.08
Number of Subjects	51	50	48	44	65	68	54	76	77	70	80	87

*Students read scripts of audio review if equipment was not operational, thus they could always rate items 12-17 that dealt with audio review content.

Note: 5-point Likert scale 1 = strongly disagree -- 5 = strongly agree

TABLE D

MEAN RATINGS ON LAQ: CEE COURSE

Item	Laboratory Activity								Overall Item Mean
	1&2	3&4	5	6&7	8&9	10	11	12	
1. The video provided adequate preparation for the lab activities	3.67*	2.89*	3.08	3.28	2.75*	2.87*	3.54*	3.47*	3.21
2. Laboratory activities instructions were clear	4.27*	3.32*	3.62*	3.74	3.75	4.02	4.13*	4.21*	3.91
3. Laboratory activity content will be useful	4.18	3.73	4.09	3.99	3.84	3.57*	3.95	3.92	3.92
4. Laboratory activities were of more practical use than video lesson	3.38	3.11*	3.61	3.35	3.73*	3.31	3.44	3.35	3.43
5. Student interaction was helpful	4.44	4.02*	4.29	4.15	4.53	4.47	4.45	4.38	4.36
6. Site coordinator was helpful during laboratory activities	4.39	3.95*	4.32	4.34	4.22	4.16	4.32	4.41	4.28
7. Site coordinator gave adequate directions	4.44*	3.86*	4.23	4.24	4.24	4.20	4.35	4.37	4.26
8. The lab was valuable in that it gave hands-on experience	3.61	3.68	4.86*	3.45	3.29*	3.10*	3.62	3.66	3.54
9. The lab lets you see the practical applications of the materials	3.86	3.70	4.00*	3.75	3.36*	3.33*	3.73	3.75	3.69
10. I successfully completed the lab	4.31*	3.40*	3.78*	3.47*	4.10	4.14	4.41*	4.42*	4.05
11. There was time to finish the laboratory activities	4.09	3.69	3.81	3.66*	4.02	3.94	4.40*	4.29*	4.01
12. The lab session was not too long	3.51	3.25	3.41	3.52	3.33	3.39	3.65	3.57	3.46
13. The lab materials were logically organized	4.10	3.50*	3.71	3.83	3.76	3.86	3.95	3.95	3.85

TABLE D -- CONTINUED

Item	Laboratory Acitvity								Overall Item Mean
	1&2	3&4	5	6&7	8&9	10	11	12	
14. Not too much material was included in the lab	3.34	3.27	3.20	3.36	3.45	3.08*	3.73*	3.74*	3.42
15. Adequate explanation came with the lab activities	4.23*	3.47*	3.82	3.79	3.82	3.97	4.05	4.13*	3.94
16. The purpose of the lab activities was clear	4.22*	3.68	3.86	3.85	3.80	3.70	4.10*	4.01	3.92
17. I would like to use the lab content in my class	4.25*	3.88	4.24*	4.02	3.92	3.48*	3.88	3.81	3.94
18. The classroom facilities were adequate	4.01	3.53*	3.67	3.62	3.81	3.76	4.02*	3.94	3.81
19. It was easy to get access to required materials	4.19*	3.74	3.67*	3.52*	3.79	4.03	4.16*	4.01	3.91
20. The lab activities were interesting	4.39*	3.86	4.11	3.83*	4.02	3.94	4.19	4.15	4.09
21. The lab helped me understand the video better	3.71*	3.28	3.64	3.56	3.14*	3.06*	3.72*	3.61	3.47
22. The lab was more enjoyable than the video	3.59	3.16*	3.59	3.16*	3.86*	3.68	3.83*	3.66	3.60
Number of Subjects	223	148	224	140	211	197	205	217	

*The mean is significantly different (.007 level) from the average of all other means for the item (the overall α level is .05)

Note: 5-point Likert scale 1 = strongly disagree -- 5 = strongly agree

TABLE E

MEAN RATINGS ON ISUSQ: CEE COURSE
(N=198)

Item		Mean
1.	The Computer Based Resource Guide training package adequately explained the use of this information system.	3.36
2.	The ERIC/AIM/ARM, RIE, CIJE training package adequately explained the use of this information system.	3.02
3.	I feel that the information request form for the Computer Based Resource Guide information system was clear in its format.	3.31
4.	I feel that the information request form for the ERIC/AIM/ARM, RIE, CIJE information system was clear in its format.	3.15
5.	I feel that it did not take too long to receive information from the Computer Based Resource Guide system.	2.87
6.	I feel that it did not take too long to receive information from the ERIC/AIM/ARM, RIE, CIJE system.	2.90
7.	The Computer Based Resource Guide information search provided me with the information I wanted.	3.22
8.	The ERIC/AIM/ARM, RIE, CIJE information search provided me with the information I wanted.	3.16
9.	The Computer Resource Guide information system gave me more information than I expected.	3.06
10.	The ERIC/AIM/ARM, RIE, CIJE information system gave me more information than I expected.	3.05
11.	The Computer Based Resource Guide information system was easy to use.	3.05
12.	The ERIC/AIM/ARM, RIE, CIJE information system was easy to use.	2.80
13.	The information received from the Computer Based Resource Guide information system was easy to interpret.	3.18
14.	The information received from the ERIC/AIM/ARM, RIE, CIJE information system was easy to interpret.	3.14

TABLE E -- CONTINUED

Item		Mean
15.	The Computer Based Resource Guide information system provided me with useful information	3.34
16.	The ERIC/AIM/ARM, RIE, CIJE information system provided me with useful information.	3.35
17.	The Computer Based Resource Guide information system is well worth the time and effort it took to use it.	3.32
18.	The ERIC/AIM/ARM, RIE, CIJE information system is well worth the time and effort it took to use it.	3.21
19.	I did not receive conflicting information from the different information systems.	3.47
20.	If the Computer Based Resource Guide information were available to me, in my school system, I would use it.	3.80
21.	If the ERIC/AIM/ARM, RIE, CIJE information system were available to me, in my school system, I would use it.	3.74
22.	I feel that the Computer Based Resource Guide information system is extremely beneficial to me as a teacher.	3.55
23.	I feel that the ERIC/AIM?ARM, RIE, CIJE information system is extremely beneficial to me as a teacher.	3.45
24.	I would recommend the Computer Based Resource Guide information system to my fellow teachers.	3.53
25.	I would recommend the ERIC/AIM/ARM, RIE, CIJE information system to my fellow teachers.	3.48

Note: 5-point Likert scale 1 = strongly disagree -- 5 = strongly agree

TABLE F

MEAN RATINGS ON SQ: CEE COURSE

Item	Seminar 1	2	3	4	Overall Item Mean
1. Pretaped films valuable supplement to course material	3.18	3.09	3.36	3.38	3.26
2. Seminar presenters did provide adequate question responses	3.26[2,3,4]	3.36	3.72	4.08[1,2,3]	3.62
3. Questions sent in were valuable in highlighting issues	3.90	3.81[4]	3.95	4.09	3.94
4. Many important questions on topic were raised	2.50	2.49	2.74	2.89[1,2]	2.66
5. Sufficient opportunity to contribute questions	4.09[3]	4.32	4.40	4.35	4.29
6. Adequate time allowed for preparation and transmission of questions	3.55[3,4]	3.83	4.05	4.09	3.88
7. Seminar discussion interesting	3.52[3,4]	3.81	3.84	4.06	3.81
8. Seminar presentation was well organized	3.59[4]	3.89	3.88	4.07	3.86
9. Seminar discussants expressed themselves clearly	3.85	3.87	3.84	4.19[1,2,3]	3.94
10. Presenters expert in content area	3.93	3.83	3.79	4.35[1,2,3]	3.98
11. Seminar helped to better understand course	3.32	3.46	3.47	3.91[1,2,3]	3.54

TABLE F -- CONTINUED

Item	Seminar 1	2	3	4	Overall Item Mean
12. Seminar compares favorably to on-site seminar	2.72	2.56	2.70	3.05 [2,3]	2.76
13. Got more out of seminar than pre-taped lessons	2.33 [2,3,4]	2.81	2.79	3.11	2.76
14. New material was introduced in the seminar	2.42	2.68	2.81 [1]	3.05 [1,2]	2.74
15. Opportunity to generate questions most valuable aspect of seminar	3.48	3.65	3.61	3.76	3.63
16. Time for seminar was not too short	3.22	3.18	3.54 [2]	3.57 [1,2]	3.38
17. This was a good time in course sequence for seminar	3.78	3.86	3.93	4.03	3.90
18. Wish more of televised lessons were seminars	2.63 [4]	2.89	2.80	2.98	2.82
19. Seminar presenters were aware of actual classroom and community problems	3.47 [4]	3.68	3.46	3.86	3.67
20. I did have a good grasp of new material presented	3.34 [3,4]	3.55 [3,4]	3.87	3.90	3.67
21. Film sections of seminar better than discussion sections	2.67	2.82	2.78	2.71	2.74
Number of Subjects	197	177	295	200	

Superscripts associated with a given seminar mean indicate the other seminar means that differ significantly ($p < .05$) by Tukey - HSD test.

Note: 5-point Likert scale 1 = strongly disagree -- 5 = strongly agree

Dr. Harold Morse
Director of Appalachian Education Satellite Project
1666 Connecticut Avenue
Washington, D.C. 20235

Dr. David L. Larimore
Director of Resource Coordinating Center
306 Frazee Hall
University of Kentucky
Lexington, KY 40506

Ms. Stephanie Bennett
AESP RESA Director
Chautauqua Board of Cooperative Educational Services (BOCES)
Box 250
Fredonia, NY 14063

Mr. Doug Cross
AESP RESA Director
Clinch-Powell Educational Cooperative
Harrogate, TN 37752

Mr. Morley Jones
AESP RESA Director
DILENOWISCO Educational Cooperative
1032 Virginia Avenue
Norton, VA 24273

Dr. William Brish
AESP RESA Director
Maryland RESA
110 Washington Street
Cumberland, MD 21502

Mr. Chuck Nickel
AESP RESA Director
TARESA
2603-C Leeman Ferry Road
Huntsville, AL 35801

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